Rethinking comprehension strategies to better prepare students for critically evaluating content on the Internet

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Good readers use a variety of strategies to solve comprehension problems or deepen their understanding of a text. Reading critically means being able to construct, extend and examine the meaning of what is read. Critical readers demonstrate the ability to investigate sources, recognize an author's purpose, distinguish opinion from fact, make inferences, form judgments and detect propaganda devices (Spache, 1964). Langer (1991) outlined four levels of behaviors that all readers should exhibit, including the ability to take a critical stance by thinking about a text from the perspective of how and why it was developed the way it was by the author. This is a highly reflective skill that requires readers to stand back and gain some distance from the text they are reading in order to perceive it more clearly within the context of a much bigger picture. Kurland (2000) eloquently captured the essence of critical reading with these words: "To noncritical readers, many texts offer the truth, the whole truth, and nothing but the truth. To the critical reader, any single text provides but one *portrayal* of the facts, one individual's 'take' on the subject."

When children are reading on the Internet, critical evaluation skills play an increasingly important role. Many argue that information on the Internet is laden with social, commercial, and political motives (Kalantzis & Cope, 2000; Kinzer & Leander, in press; Leu & Kinzer, 2000). A recent survey of activities available on children's websites (Aufderheide, 2001) determined that despite privacy restrictions invoked by the Children's Online Privacy Protection Act, many commercial websites continue to engage in "manipulative advertising" practices where commercial marketing, informational content and activities are merged "as a way to promote products and services, directly or indirectly." Similarly, one can now easily locate entire websites devoted to keeping up with the ever-growing collections of informational hoaxes that appear on the Internet (e.g., Current Netlore at **<http://urbanlegends.about.com/library/blhoax.htm>**; The Museum of Hoaxes at **<http://www.museumofhoaxes.com>**; and Kathy Shrock's compilation at **<http://school.discovery.com/schrockguide/eval.html>**). These examples clearly demonstrate the incredibly complex challenges for educators struggling to prepare students to analyze, evaluate and interact with informational texts on the Internet.

The RAND Reading Study Group (2002), which outlined the direction that reading research in comprehension is likely to take over the next two decades, emphasizes the need to integrate reading instruction with content area instruction using the rationale that textbooks "are not designed as a context for comprehension instruction, but comprehension instruction that uses these texts may be crucial if students are to understand or learn from them" (p. 4). I would argue, as I have done before (Coiro, 2003), that Internet texts are an important extension of content area texts, and that comprehension instruction that specifically deals with the unique qualities of Internet texts is just as crucial. In this article, I will outline how the Internet challenges our current notions of traditional informational texts with issues that include a lack of consistency in multimedia formatting, a lack of quality control, access to an infinite amount of information, problems with currency, and most important, increased exposure to a growing amount of information for young readers designed to sell, discredit, deceive or persuade.

Critical literacy experts and professional organizations have developed numerous evaluation guides and checklists to aid teachers and students as they read on the Internet (e.g., see examples listed at **<http://www2.vuw.ac.nz/staff/alastair_smith/evaln/evaln.htm>**). Although many include questions about content, most educators attend to variables that are more about graphic design and usability rather than the actual content of the message itself (Cottrell, 2001). Similarly, a recent poll of 1,500 adult Internet users found that "the average consumer paid far more attention to the superficial aspects of a site, such as visual cues" like layout, font size and color scheme, rather than focusing on the "breadth, depth, and quality of a site's information" (Stanford Persuasive Technology Lab, 2002). As a result, teachers and students are often distracted by their focus on the glitz of web design and the workability of links and are not spending enough time focusing on evaluating the explicit content or the implicit messages contained within information on the Internet for the purpose of building comprehension and critical reading skills.

My work with teachers in professional development sessions supports this notion. Often, using these checklists to evaluate a parody website such as The Onion **<http://www.theonion.com>** or HotAir **<http://www.improbable.com>**, teachers will notice that each of these websites is very current, has contact information about the author, loads quickly, is well organized and has a page full of working links, yet upon closer critical examination (and often only after being told by someone "in the know"), one realizes that the actual information communicated in text, visual and video form is completely, and deceivingly, bogus. If highly literate educators are having difficulty discerning fact from opinion and truth from fiction while reading on the Internet, then surely our students are struggling with the same issues (read more in Alan November's (1998) *Teaching Zack to Think*, available online at **<http://www.anovember.com/articles/zack.html>**).

Critical reading strategy instruction must be a priority for anyone reading on the Internet. Consequently, classroom teachers and library media-specialists must join forces to help expand their daily reading and content-area curriculums to embrace technological issues like "information literacy" (American Association of School Librarians, 1998), "visual literacy" (Burmack, 2002) and "media literacy" (Brunner & Tally, 1999); skills not currently at the forefront of language arts curriculums (Kinzer & Leander, in press; Leu, 2002). Thus, the purpose of this article is two-fold: first, to explore the nature of information on the Internet and the implications related to critical reading and comprehension instruction; and second, to highlight a few instructional models that can help shape a broader critical comprehension curriculum. My hope is to provide a link between research and practice for educators attempting to integrate research-based reading practices with new technologies in their classrooms. This two-tiered format is also intended to illustrate how the Internet functions both as the source of new challenges for literacy educators as well as the source of excellent instructional solutions.

THE NATURE OF INFORMATION ON THE INTERNET: IMPLICATIONS FOR COMPREHENSION INSTRUCTION

When exploring the nature of informational texts on the Internet, there are at least six features that should impact our thinking about reading comprehension instruction that encompasses new information and communication technologies.

There is little consistency in the multimedia formatting of information on the Internet.

The Internet is growing by leaps and bounds and information is commonly communicated in multiple media formats (Brunner & Tally, 1999; Reinking & ChanLin, 1994) with little uniformity in style and design from one website to another (Ciolek, 1996). Readers accustomed to previewing familiar printed text patterns and formats to get the gist of a new text can be taken off-guard by such inconsistencies. Moreover, children who visit new websites are often distracted from the main information by spinning animations, immediate links to unrelated topics and downloads to interactive games that may have called attention away from the author's original intention. Similarly, in television environments, viewers can usually distinguish between commercials and an actual television program, yet, young readers on the Internet have trouble identifying advertisements even when they are labeled as such with bold-faced blinking text (Neilson, 2002). These differences introduce new challenges and considerations for readers attempting to efficiently skim and scan information on a website to decide if the information suits their purpose, to quickly determine the basic content of the site and to locate important parts of the website that will most appropriately address their needs.

There is little in the way of quality control of the information that is constructed and communicated on the Internet.

Anyone with access to the Internet can easily compose and publish informational text, graphical images, and video clips without going through the processes of peer- review or screening; likewise, anyone can claim to be an authority on a particular subject. Consequently, several researchers and media experts (e.g., Burbules, 1999; Ciolek, 1996; Harris, 1997) have questioned the credibility of information on the Internet. These scholars strongly encourage readers to actively assume responsibilities once given to editors and publishing companies. On the Internet, young readers are now expected to identify authors, investigate their qualifications, pay attention to their sponsors and verify contact information in case of questions, comments or problems. Similarly, readers should be able to make judgments about the overall quality and richness of the content available by a web author.

The amount of information available on the Internet can be overwhelming.

Free and easy access to the proliferation of information on the Internet has led some to issue warnings of there being "more information available than we can possibly digest or consume or fathom. We have passed from a smokestack age which was information lean to an age of info-glut and info-garbage" (Mackenzie, 1997, **<http://www.fno.org/mar97/deep.html>**). Several researchers have identified a number of learning dilemmas faced by students when using the Internet as a source of information for research based assignments (e.g., Eagleton, 2001; Sutherland-Smith, 2002; Todd, 1997). However, once Internet readers can effectively navigate the results of a search engine and sift through the piles of "info-garbage", they will discover a goldmine of links to subject matter experts, tele-collaborative discussions with peers, and information grounded in multiple perspectives that are related to any one issue or topic. Thus, to avoid the risks associated with information overload, it is imperative that students and their teachers be literate in Internet navigational strategies and how to competently apply these as part of a process that involves searching online for the purposes of validating, critically questioning and responding to informational texts they read on the Internet.

Many resources on the Internet are out-of-date or have not been updated for years.

Given the immense growth in the number of Internet webpages and the constant change of service providers, it is quite difficult even for web authors with good intentions to keep the links on their website working and current. In fact, many web authors include a clause on their page indicating that they cannot be held responsible for broken links or changing information appearing at these links. Moreover, just because a page was recently updated does not mean that the information is up-to-date. As a result, readers need to be taught how to read deeply within the context of the topic itself while looking for clues that might help determine the date of the information provided and then, how to locate more current information if the original source is indeed out-of-date.

Digital manipulation has become a popular form of deception on the Internet.

Media literacy experts are wrestling with the issues arising from an increasing number of electronically altered images that are shared via the Internet (read more from The Center for Media Literacy's "Is Seeing Believing?" project at **<http://www.med.sc.edu:1081/isb.htm>**). In the beginning of the PBS video *Media Matters* featured from their accompanying Newseum website **<http://www.newseum.org/>**, the narrator explains, "In the traditional process of news photography over the decades, the image itself was rarely tinkered with. But things are now different. Today's computer technology makes such alterations not only easy, but also undetectable. And it's happening a lot". On Internet web pages and within email messages, readers are often exposed to digital images constructed to trick, persuade, misinform, or discredit. Fake photographs of President Bush (see **<http://www.wired.com/news/politics/0,1283, 56430,00.html>**) and the attack on the World Trade Center (see **<http://parthenocarpy.org /body/debunk.htm>**), or the pairing of real photos with fictitious reports (see examples from a collection compiled by Kathy Schrock at **<http://school.discovery.com/schrock/eval. html>**) pose new challenges for readers. Most traditional language arts curricula tend to emphasize the process of making meaning from text as opposed to critically analyzing and interpreting the messages within images (Brunner & Tally, 1999). The Internet demands that we teach students to think about how images are constructed and to realize the power and influence of various types of visual messages.

Information on the Internet is often intertwined with hidden social, economic, and political agendas.

These forces have the potential to influence and bias unsuspecting, non-critical readers (Kalantzis & Cope, 2000; Kinzer & Leander, in press; Leu & Kinzer, 2002). Personal information is regularly solicited, website visitors who stay long or share the website with friends are rewarded with special prizes and gimmicks, and "barely disguised product marketing surveys" populate many websites designed for young readers (Aufderheide, 2001). Advertisements, interactive games, search functions, informational passages, related links and consumer surveys at popular children's websites like American Girl **<http://www.americangirl.com/>**, LegoLand **<http://www.legoland.com/>** and Scholastic **<http://www.scholastic.com/>** are often intertwined within the same web page, causing confusion about the author's underlying intentions. This has prompted media literacy experts to integrate critical literacy strategies into classroom instruction to help students approach and process both traditional and new media with a sense of informed skepticism and critical "habits of mind" (Brunner & Tally, 1999; Jones & Falanga, 2000). Critical questions outlined by Brunner & Tally encourage students to consider the following questions when viewing any type of media: "What particular perspective of reality is presented? What explicit or hidden values underlie this text? What media conventions are used in this text and how do they shape the way the information is interpreted? Who is the intended audience and how might different audiences interpret the text? And who owns the text and who benefits from it?" Answers to these critical questions encompass the new literacies demanded by all six of the features of informational texts on the Internet discussed above and are crucial to the process of developing competent readers and critical thinkers in the age of information and communication technologies.

To summarize, traditional informational texts for young readers are written in a familiar textbook format, pass through several editing processes, represent a finite amount of information bound within the covers of a book, and are full of images and related information designed primarily for the purposes of informing or elaborating. In contrast, I have shown that Internet texts are often constructed with inconsistent features, pass through few editing processes, represent an infinite amount of links to related information, and are often designed to sell, deceive, or persuade young readers. As educators, we need to help students become more aware of these differences and how and when to appropriately apply traditional comprehension strategies or develop new ones to comprehend what they read on the Internet.

INSTRUCTIONAL MODELS FOR CRITICAL COMPREHENSION INSTRUCTION

Paradoxically, educators can turn to the same Internet that poses such challenges to access models of instructional resources that inspire us in our attempts to meet the needs of readers and writers developing new literacy skills. I've discovered several categories of websites that address critical reading and thinking within Internet text environments; I'll briefly mention three here including (1) developmentally appropriate interactive test-drives through comprehension tasks influenced by Internet issues; (2) efforts to share lessons that integrate media and visual literacy skills with more traditional critical reading strategies; and (3) online repositories designed to elicit and store critical evaluations. Let's explore just a few online resources in each area.

Several hands-on interactive environments have been designed to engage students in developing an awareness of important Internet issues. Students of any age can be introduced to differences in critical reading on the Internet as they earn their very own Internet driver's license. Elementary readers learn the "rules of the road" as they earn an official PBS Kid's Web License at **<http://pbskids.org/bts/license/>**, middle school readers enjoy the Safe Surfin' Driver's Challenge at **<http://www.safesurfin.com/drive_ ed.htm>** and older readers have much to learn from the Texas Information Literacy Tutorial (TILT) at **<http://tilt.lib.utsystem.edu/>**. Likewise, teachers and students alike can explore Gayle Perry's online tutorial for Evaluating and Citing Web Sources at **<http://teams.lacoe.edu/documentation/classrooms/gayle/evaluate/evaluate.html>** or become Internet Detectives as they engage in activities available at **<http://www.sosig.ac.uk/desire/internet-detective.html>**.

Second, media experts, classroom teachers and educational organizations familiar with media and visual literacy standards are sharing ideas on how to integrate these skills into more traditional critical reading strategy lessons to address issues of comprehension on the Internet. Ithaca College's Project Look Sharp at **<http://www.ithaca.edu/looksharp/resources/integration/principles.html>** highlights twelve basic principles of integration and related activities to help point you in the right direction, and the curricu-

lum from Cybersmart <http://www. cybersmartcurriculum.org/curr_over/> supports the transition of critical thinking to Internet environments. Educators cognizant of new Internet literacies have designed lessons to help students appreciate the complexities of online advertising <http://www.education-world.com/a_lesson/lesson158.shtml>; use Internet resources to validate simple facts [with some surprising results] <http://www.classroomtools.com/facts.htm>; interpret propaganda <http://www.classroomtools.com/prop.htm>; recognize digital manipulation <http://www.fakeorfoto.com/>, understand the impact of visual design <http://www.kn.pacbell. com/wired/21stcent/principles.html> and view primary document sources with a critical eye <http://memory.loc.gov/ammem/ndlpedu/index.html>.

Finally, this sharing of effective resources and strategies on the Internet has inspired some to offer their services in managing online projects geared toward eliciting and storing student products of critical evaluation tasks. Students from around the world are collaborating with teachers Susan Silverman and Melissa McMullen at <http://comsewogue.k12.ny.us/~ssilverman/documents/index.htm> to locate historical documents and generate critical evaluation questions that are published online for others to answer. Similarly, middle school students in the state of Wisconsin have joined forces as Internet Detectives at <http://www.madison. k12.wi.us/tnl/detectives> to build a student-generated library of evaluated Internet resources built around content-specific evaluation criteria as a positive alternative to Internet filtering in their schools.

Clearly, the path has been paved for educators eager to explore critical comprehension strategies that will prepare students for reading on the Internet. Researchers, classroom teachers, media literacy experts and technology specialists must continue collaborative efforts to develop a more cohesive set of critical reading strategies that weaves its way through traditional reading comprehension curriculums with a strong emphasis on how the Internet impacts reading, thinking and communicating. Only then can we expect students to select Internet technologies that enhance comprehension and to ignore those that detract from understanding what they read.

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